

Lightweight, Flexible, and Freezable Heat Pump/Radiator for EVA Suits, Phase II

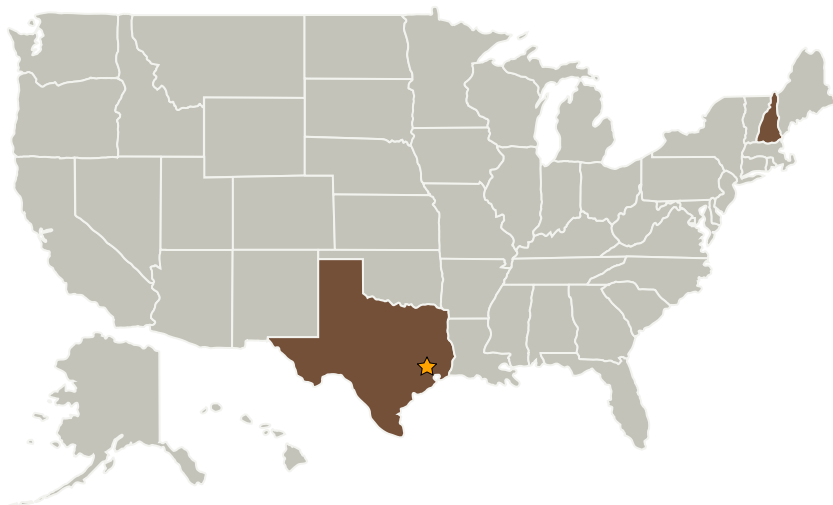
Completed Technology Project (2008 - 2010)



Project Introduction

Manned lunar exploration will require extravehicular activity (EVA) suits that surpass existing technology. We propose an innovative thermal control system for EVA suits that uses an absorption heat pump with a flexible radiator that offers reduced size, lighter weight, conformability, rugged construction, and freeze tolerance. The heat pump absorbs a crew member's metabolic heat and rejects it via radiation to the environment. Innovative materials and construction enable a lightweight and flexible system that is rugged and easily repairable. In Phase I we proved feasibility by assessing material suitability for lunar operations, demonstrating the critical fabrication steps for key components, then testing these components to demonstrate thermal performance. In Phase II we will build, demonstrate, and deliver a complete prototype heat pump system.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Creare LLC	Supporting Organization	Industry	Hanover, New Hampshire



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

New Hampshire

Texas

Project Transitions



February 2008: Project Start



February 2010: Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX14 Thermal Management Systems
 - └ TX14.2 Thermal Control Components and Systems
 - └ TX14.2.3 Heat Rejection and Storage